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CLAIMS:

1.   An apparatus for efficiently performing spatial scalable compression of video information captured in a plurality of frames including an encoder for encoding and outputting the captured video frames into a compressed data stream, comprising:
            a base encoder (214) for encoding an interlaced bitstream having a relatively
5   lower pixel resolution;
            a spatial enhancement encoder (224) for encoding a differential between a de-interlaced local decoder output from the base layer and an input signal for producing an intermediate enhancement stream.

10   2.   The apparatus according to claim 1, wherein a de-interlaced local decoder output is upsampled prior to the spatial enhancement encoder.

3.   The apparatus according to claim 1, wherein the input signal is a de-interlaced version of the original interlaced input signal.

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4.   The apparatus according to claim 1, wherein the input signal is a downsampled version of the original input signal.

5.   The apparatus according to claim 4, wherein a downsampler (210) is used for
20   creating a base stream which is inputted into the base encoder.

6.   The apparatus according to claim 5, wherein a re-interlacer (212) is used to create an interlaced base stream which is encoded by the base encoder.

25   7.   The apparatus according to claim 1, further comprising:
            temporal subsampling unit (232) for subsampling the intermediate enhancement stream to produce a spatial enhancement stream.

8.   The apparatus according to claim 7, further comprising:

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means (246) for adding together the local decoder outputs of the base encoder and the enhancement encoder;

means (232) for temporally subsampling the combined local decoder;

means (234) for applying motion compensated temporal interpolation to the temporally subsampled signal.

9.   The apparatus according to claim 8, wherein the output of the local decoder of the base encoder is compared with the temporal interpolated signal.

10.   The apparatus according to claim 9, wherein information is encoded as a temporal enhancement signal on groups of pixels when said comparison exceeds a predetermined threshold value.

11.   The apparatus according to claim 8, wherein the motion compensated temporal interpolation is natural motion interpolation.

12.   The apparatus according to claim 11, wherein the motion estimation of the temporal interpolation makes use of the local decoder signal of the base encoder.

13.   The apparatus according to claim 1, further comprising:

a multiplication unit (242) for multiplying input signal to the spatial enhancement encoder.

14.   The apparatus according to claim 13, further comprising:

a signal analyzer (404) for controlling a gain of the multiplication unit.

15.   A layered encoder for encoding an input video stream, comprising:

an interlacer unit (212) for creating an interlaced base signal from the input video stream

a base encoder (214) for encoding the interlaced base stream which has a lower pixel rate;

a de-interlacer (218) for de-interlacing a local decoder output from the base encoder;

a subtractor unit (222) for subtracting the de-interlaced stream from the input video stream to produce a residual signal;

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an enhancement encoder (226) for encoding the residual signal and outputting an intermediate enhancement stream.

16.   The layered encoder according to claim 15, further comprising:
5   a temporal subsampling unit (232) for sampling the intermediate enhancement stream and outputting a spatial enhancement stream.

17.   The layered encoder according to claim 16, further comprising:
           an temporal subsampler (232) for temporal subsampling a combined local
10   decoder output of the base encoder and the enhancement encoder;
           a motion compensated temporal interpolation unit (234) for performing motion estimation on a signal outputted by the temporal subsampler;
           an evaluation unit (236) for comparing interpolated frames from the motion compensated temporal interpolation unit with actual frames from the local base decoder, and
15   selecting data as a temporal residual stream when the comparison exceeds a predetermined threshold value; and
           a temporal encoder (238) for encoding the temporal residual stream to produce a temporal enhancement stream.

20   18.   The layered encoder according to claim 17, wherein the temporal encoder is being realized by muting information of the enhancement encoder.

19.   A method for encoding an input video stream, comprising the steps of:
           creating an interlaced video stream from the input video stream
25   encoding the interlaced video stream to produce a base stream;
           de-interlacing a local decoder output from a base encoder;
           subtracting the de-interlaced stream from the input video stream to produce a first residual stream;
           encoding the resulting residual stream and outputting an spatial enhancement
30   stream.

20.   The method according to claim 19, further comprising the step of:
           temporal subsampling the intermediate enhancement stream to produce a spatial enhancement stream.

21.   The method according to claim 20, further comprising the steps of:
performing a temporal subsampling a combined local decoder output of the base encoder and the enhancement encoder;

5   performing motion estimation on a signal outputted by an temporal subsampler;

comparing interpolated frames from a motion compensated temporal interpolation unit with actual frames from the local base decoder, and selecting data as a temporal residual stream when the comparison exceeds a predetermined threshold value; and

10   encoding the temporal residual stream to produce a temporal enhancement stream.

22.   A decoder, comprising:
a first decoder (300) for decoding a spatial enhancement stream;

15   a second decoder (302) for decoding a base stream;
a de-interlacer (306) for de-interlacing the decoded base stream;
an addition unit (312) for adding the de-interlaced decoded base stream and the decoded spatial enhancement stream.

20   23.   The decoder according to claim 22, further comprising;
an upsampling unit (308) for upsampling the de-interlaced stream prior to the addition unit.

24.   The decoder according to claim 22, further comprising:

25   a temporal subsampling unit (310) for temporal subsampling the de-interlaced base stream;

a motion compensation temporal interpolation unit (314) for interpolating an output from the addition unit;

a third decoder (304) for decoding a temporal enhancement stream;

30   a combination unit (316) for combining the upsampled stream, the interpolated stream and the decoded temporal enhancement stream to produce a decoder output.